

CLAIMS

1. An optical transmitter comprising:

a coherent light source;

5 a frequency control loop that measures and controls a transmission frequency of  
said coherent light source; and

an optical filter having a controllable center frequency that filters a modulated  
signal derived from said coherent light source; and

wherein said frequency control loop tunes said controllable center frequency to be  
10 a fixed spacing away from said transmission frequency.

2. The optical transmitter of claim 1 wherein said optical filter outputs a VSB signal.

3. The optical transmitter of claim 1 further comprising:

15 a modulator that amplitude modulates output of said coherent light source to  
transmit digital information.

4. The optical transmitter of claim 3 wherein a bandwidth of said optical filter is  
between 0.4 and 0.7 times a bit rate equivalent bandwidth of said digital information.  
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5. The optical transmitter of claim 3 wherein a difference between said transmission  
frequency of said coherent light source and said controllable center frequency is between  
0.2 and 0.35 times a bit rate equivalent bandwidth of said digital information.

6. A WDM optical transmission system comprising:

    a plurality of optical transmitters, each of said optical transmitters comprising:

        5 a coherent light source;

        a frequency control loop that measures and controls a transmission frequency of said coherent light source; and

        an optical filter having a controllable center frequency that filters a modulated signal derived from said coherent light source; and

    10 wherein said wavelength control loop tunes said controllable center frequency to be a fixed spacing away from said transmission frequency.

7. The WDM optical transmission system of claim 6 further comprising:

    within each of said plurality of optical transmitters, a modulator that amplitude

15 modulates output of said coherent light source to transmit digital information.

8. The WDM optical transmission system of claim 7 wherein, within each of said plurality of optical transmitters, a bandwidth of said optical filter is between 0.4 and 0.7 times a bit rate equivalent bandwidth of said digital information.

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9. The WDM optical transmission system of claim 7 wherein, within each of said plurality of optical transmitters, a difference between said transmission frequency of said coherent light source and said controllable center frequency is between 0.2 and 0.35 times a bit rate equivalent bandwidth of said digital information.

10. The WDM optical transmission system of claim 7 wherein said transmission frequencies of said coherent light sources of said optical transmitters are spaced more  
5 closely than twice a bit rate equivalent bandwidth of said digital information.

11. A method for transmitting an optical signal comprising:

generating a coherent light signal;  
measuring a transmission frequency of said coherent light signal;  
10 locking said transmission frequency to a desired transmission frequency;  
bandpass filtering a modulated signal derived from said coherent light signal; and  
controlling a center frequency of said bandpass filtering to be a fixed spacing  
away from said transmission frequency.

15 12. The method of claim 11 further comprising:

modulating said coherent light signal so that a signal developed by said bandpass  
filtering comprises a VSB modulated signal carrying digital information.

13. The method of claim 12 wherein bandpass filtering comprises bandpass filtering  
20 using a bandwidth of between 0.4 and 0.7 times a bit rate equivalent bandwidth of said  
digital information.

14. The method of claim 12 wherein controlling said center frequency comprises maintaining spacing between said center frequency and said center frequency to be between 0.2 and 0.35 times a bit rate equivalent bandwidth of said digital information.

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15. Apparatus for transmitting an optical signal comprising::

means for generating a coherent light signal;

means for measuring a transmission frequency of said coherent light signal;

means for locking said transmission frequency to a desired transmission

10 frequency;

means for bandpass filtering a modulated signal derived from said coherent light signal; and

means for controlling a center frequency of said bandpass filtering to be a fixed spacing away from said transmission frequency.

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16. The apparatus of claim 15 further comprising:

means for modulating said coherent light signal so that a signal developed by said bandpass filtering means comprises a VSB modulated signal carrying digital information.

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17. The apparatus of claim 16 wherein said bandpass filtering means comprises means for bandpass filtering using a bandwidth of between 0.4 and 0.7 times a bit rate equivalent bandwidth of said digital information.

18. The apparatus of claim 16 wherein said controlling means comprises means for maintaining spacing between said center frequency and said center frequency to be between 0.2 and 0.35 times a bit rate equivalent bandwidth of said digital information.

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